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Cranberry Culture in Western Washington and Its Relation to Possibilities in Southeastern Alaska



BY

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U. S. Forest Service

Juneau, Alaska



PHOTO NO. 1

Raw peatland at Grayland showing over-burden. Timber in background overlying sedge peat.

PHOTO NO 2

Cranberry fields at Grayland showing tram road.



PHOTO NO. 3

Spring planting showing growth in following fall—1940. Raw land in background. Reserve water reservoir to right.

PHOTO NO. 4

Weeding cranberry fields. Note string picking markers used at last harvest.

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A locality in Western Washington generally referred to as the "Aberdeen Area" has, over a period of ten years, been improved for cultivation and devoted to the growing of cranberries. It is situated about 25 miles south of Aberdeen, near the settlement of Grayland. The present improved fields comprise approximately 1,500 acres.

The section embracing the cultivated land lies close to the Pacific Ocean beach and consists of a relatively narrow strip between the beach sand dunes and the paralleling timbered hills.

The "Soil" is a deposit of peat or muskeg overlying a gravelly substratum. It is supposed that this peat area at one time comprised the ocean beach line and that subsequent tidal action establishing the present beach line left a depression which is now overlain with peat. The surface peat is a relatively thin layer of sphagnum moss overlying sedge or reed peat to a depth varying from 4 to 10 feet.

The cover on the Grayland bogs consists of a very heavy growth of grasses, brush, Hudson Bay tea, alder, cottonwood, and several species of conifers. This cover is in sharp contrast to the open treeless bogs of Southeastern Alaska. (Photo No. 1)

The settlement at Grayland includes a number of farmers who formerly engaged in lumbering and logging on Gray's Harbor. They have developed a prosperous community. Their industry is reflected in the well-kept berry

farms, substantial dwellings and a cooperative marketing agency for their products.

The cranberries produced at Grayland are sold under the brand "Mist-Kist." They are of good size and flavor and are found on the retail markets from Northern Washington to Southern California.

The preparation of areas for cranberry culture involves:

Scalping:—Removing all grasses, timber and other overburden including the layer of sphagnum moss.

Ditching:—To provide escape of excess water in the sedge peat stratum and to maintain an even water level. A most satisfactory water level is at a depth of 12 to 16 inches.

Surface Preparation:—The surface of the cleared areas must be smooth and on a slight gradient. Depression pockets catch an excess of moisture during heavy precipitation and these spots develop a growth of moss which crowds out the cranberry plants.

Sanding:—After the surface has been thoroughly scalped and graded a covering of clean sand is added. This should be 2 to 3 inches deep and consist preferably of a coarse sand. The purpose of this sand is to aid in the retention of the surface moisture and to keep down the growth of weeds.

Moisture:—It is important that the top soil enfolding the root system of the cranberry plants be kept moist at all times. This is accomplished through maintaining the proper water level in the ditches and through the surface covering of sand. In the Grayland district the water feeding into the bogs comes from the adjacent hill springs and from rain and fog. There is usually a dry period of from 2 to 5 weeks during the critical time in the growing season when the water table lowers. Unless the farmer is so situated geographically that his land receives the maximum benefit of the hill drainage or he is prepared to pump water into the ditches, his crop suffers accordingly. In some cases reservoirs are maintained from which water can be pumped when needed.

Planting:—The mature cranberry vines are pruned in February and plantings are made with these slips in early spring. Two or three slips are bunched and bent double bringing the ends together. This is called "looping". The loop is forced through the sand and embedded in the peat about one inch. The loose protruding ends are then clipped back to about two inches above the surface. From 500 to 600 pounds of slips are required to plant one acre. These slips keep well after pruning. Ordinarily they are not kept by the farmer beyond March 31 when planting is completed. The usual sale price is 2 cents per pound.

The principal variety of cranberry in cultivation at Grayland is the "McFarland," an early variety which originated at Cape Cod. On a few areas the "Howe," a late variety, is cultivated.

The yield per acre depends upon the site, thoroughness of preparation, care of planted area, weather, etc.

First year plantings do not bear fruit and the second year yield is low. At the third year an average yield is 200 boxes per acre. (A box is $\frac{1}{4}$ bbl. net or approximately 20 lbs.) An average, well-cared for, mature, cultivated area will yield 300-400 boxes per acre. The gross return in 1940 was \$3.00 per box. Mr. U. W. Wilen secured an unusually high yield of 2,111 boxes from $2\frac{1}{2}$ acres of plantings from 3 to 8 years old, a gross return of \$6,333.00. All marketing is through a cooperative association.

Areas for cranberry culture are usually laid out in rectangles approximately 120 feet by 1250 feet. A track of light steel or wooden 2-inch by 4-inch rails is constructed the length of the field, down the center line. Push cars are used to carry spraying equipment and the harvested crop. Picking strips are marked by means of light string at right angles to the track. (See Photo No. 2-4).

The plants are set in rows 12 inches apart, each way. (Photo No. 3 shows first year growth).

Harvesting is paid for on a piece-work basis. Good pickers earn from \$3.50 to \$5.00 per day.

Weeds must be kept down. Weeding is done in February and March. Horse-tail, a weed common to sedge-peat is troublesome.

The principal pest is the fire-worm. Multicide is the common spray used to combat it. The fire-worm hatches 2 to 3 times in a single growing season and spraying is required from 6 to 8 times during May, June and July. In 1940 the cost of spraying averaged 6 cents per box.

Moss persisting in surface pockets is eliminated through application of Bordeaux mixture.

Mature cranberry beds form a dense mat of vines close to the surface and this mat provides a degree of protection from light frosts. However, heavy late spring or early fall frosts are fatal to the budding plants and mature berries.

The sedge peat formation at Grayland is quite similar in composition to many of the bogs or muskegs of South-eastern Alaska. The general topography of the Alaska bogs makes for easier and cheaper drainage. The bogs at Grayland lie in a depression between the timbered ridge to the east and the intervening sand dunes paralleling the ocean beach line. Alaska bogs occur on sites well above sea level and adjacent to natural water courses.

Grayland bogs support a comparatively thin layer of sphagnum moss, dense cover of grasses and brush and a heavy stand of scrub spruce, cedar, alder and pine. The typical Alaska bog supports a very sparse growth of conifers, practically no grass and a thin growth of shrubs. On many sites in Alaska the sedge-peat is overlain with a thin layer of sphagnum moss-peat.

The heavy cover on the Grayland bogs makes the cost of scalping around \$600.00 per acre. The raw land is all in private ownership and sells for \$200.00 per acre. Initial cost of land, scalping, ditching, sanding and planting brings the cost of a planted acre to approximately \$1,000.00.

The cost of preparation of an average acre of Alaska sedge-peat bog for the purpose of growing cranberries will

likely be not more than one-fourth the above figure. Most of the bogs in Southeast Alaska are on National Forest land and suitable sites for cranberry culture occur on tracts laid out for entry under the homesite law in the vicinity of the coastal towns. However, there are a number of non-National Forest tracts within the eliminated areas at Ketchikan, Wrangell, Sitka and Petersburg which are potential cranberry farms and capable of being put in condition for planting at a comparatively low cost.

The average rainfall at Grayland is about 80 inches per annum. Ocean fogs are prevalent and provide much of the needed moisture. However, this section has quite a definite dry period during the growing season. Precipitation in Southeastern Alaska considerably exceeds that at Grayland. The following precipitation table over a 5-year average or more, shows that sufficient moisture is available in Alaska throughout the growing season to supply the needs of cranberries.

	April	May	June	July	August	Sept.
Ketchikan (El. 75')	11.57	7.56	5.97	8.70	14.35	13.33
Sitka (El. 65')	5.44	3.95	3.30	4.01	7.16	11.92
Wrangell (El. 35')	4.16	3.93	2.87	3.29	5.69	9.77
Petersburg (El. 72')	6.15	6.25	5.62	5.59	8.03	12.38
Juneau (El. 80')	5.26	5.23	3.81	5.13	7.39	10.49

Late spring frosts, if severe, seriously affect the flowering plants and immature berries. Severe early fall frosts are injurious to the developed berries and those hit by such frosts are suitable only for canning. The following table shows the prevalence of frost in Southeastern Alaska.

Number of days with temperature of 32° and below:

	April	May	June	July	August	Sept.	Oct.
Ketchikan	14	6	0	0	0	0	4
Sitka	12	3	0	0	0	0	3
Juneau	8	1	0	0	0	0	4

Data for other localities missing.

Mean temperatures for the growing season in Southeastern Alaska for 1937 were as follows:

	April	May	June	July	Aug.	Sept.	Oct.
Ketchikan	42.6	48.6	58.0	57.2	56.7	56.8	51.0
Wrangell	49.2	58.0	57.1	55.6	54.1	49.7	37.8
Petersburg	41.8	48.2	54.8	55.8	54.7	52.2	46.8
Sitka	41.2	45.8	43.2	54.2	54.2	52.5	47.0
Juneau	40.6	47.0	55.7	55.1	54.6	52.7	47.4

The first frost seldom occurs before October 15th. The period between late spring and early fall frost usually covers at least 170 days.

There is no climatic record for Grayland. However, the settlement of Lone Tree at the north entrance of Gray's Harbor is similarly situated geographically and the average temperature and rainfall for this station should be close to that at Grayland.

The average annual precipitation at Lone Tree is 73.85 inches.

The average temperature at this station is given below in comparison with that at Wrangell, Alaska.

	April	May	June	July	Aug.	Sept.	Av.
Lone Tree,							
Washington	48.5	52.5	55.6	58.3	57.6	52.4	54.1°
Wrangell, Alaska....	49.2	58.	57.1	55.6	54.1	49.7	53.9°

Over the same period the average for Juneau is 50°; Petersburg 51.2° and Ketchikan 53.1°.

Climatic data for Western Washington shows that on the ocean coast the average temperature for the warmest summer month is 57° with an average daily range in temperature from the lowest to the highest of only 8°.

The highest temperature recorded at Lone Tree, in the month of May is 86°. The highest temperature recorded at Wrangell over a 5-year period is 92° in June and July.

Climatological data covering Fairbanks indicates that this section of Alaska is subject to relatively low temperatures in late May and early September. This condition shortens the growing season for berries and would doubtless result in the production of a smaller fruit that would command a lower market price. Experiments may, however, prove that this section of Alaska can produce a berry that would find a local market, especially for canning purposes.

The writer wishes to express his appreciation for assistance received in obtaining data on the Grayland bogs to Mr. Frank Cotter, of the staff of the Alaska Weekly, Seattle; Mr. Sam K. Bowes, Aberdeen, Washington, and Mr. U. W. Wilen, Grayland, Washington.

